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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,523	08/05/2003	Takeshi Okada	03500.015395.1	5405

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EXAMINER

OLSEN, ALLAN W

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/633,523	Applicant(s) OKADA ET AL.	
	Examiner Allan Olsen	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 06 June 2006.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1,2,4-7,9 and 11 is/are pending in the application.

 4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1,2,4-7,9 and 11 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 05 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

 a) ☒ All b) ☐ Some * c) ☐ None of:

 1. ☐ Certified copies of the priority documents have been received.

 2. ☐ Certified copies of the priority documents have been received in Application No. 09/867,492.

 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	6) <input type="checkbox"/> Other: _____

U.S. Patent and Trademark Office
PTOL-326 (Rev. 7-05)

Office Action Summary

Part of Paper No./Mail Date 20060818

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DETAILED ACTION

The rejection as set forth in the previous Office action is maintained and is repeated below.

Response to Arguments

Applicant's arguments filed June 6, 2006 have been fully considered but they are not persuasive.

Applicant argues:

" Seki et al. does not teach or suggest forming pixels by applying ink containing at least a setting ingredient, water, and an organic solvent to the areas surrounded by the partition walls and then setting the ink, as recited in Claim 1."

In response the examiner notes that following excerpts from Seki (with emphasis added) do not support applicant's argument.

[0132] Each of the pixels 7 is formed in a circular depression having a diameter of 50 .mu.m, for example, enclosed by a bank layer. The bank layer partitioning the pixels has a width of 10 .mu.m and a height of 2 .mu.m, made of a material as previously described. A **poly(para-phenylenevinylene) (PPV) precursor** solution or other organic semiconductor material solution is used for the liquid material (wherein **the PPV precursor solution is diluted with DMF, glycerin, and diethylene glycol to make an ink**). This liquid material is discharged into the areas to be coated enclosed by the banks using an ink jet process, and heated to form an organic semiconductor film 43. The hole injection-carrier layer may have a laminar structure formed by ink-jetting or spin-coating an electrically conductive material such as a polyethylene dioxythiophene.

[0145] Organic semiconductor (organic EL element) film formation process: After the surface treatment described above, the organic semiconductor films 43 corresponding to R, G, and B are formed by an ink jet process in the areas to be coated partitioned in circular shapes by the banks. That is, the liquid material that is the material for configuring the organic semiconductor film 43 is discharged from the ink jet recording head for the circular areas to be coated enclosed by the bank layer. In a specific example, for the red light emitting layer material, the PPV precursor made into ink as noted above and

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doped with pigments such as rhodamine or beliren, or a PPV precursor (MHE-PPV) made into ink, was used. For the material for the blue light emitting layer, a polyfluorine derivative made into ink by dissolving it in an aromatic solvent such as xylene was used. The droplet diameter thereof was 30 μm .

[0146] Following thereupon, in the case of a PPV precursor solution (a PPV precursor solution diluted with DMF and made into ink), the solvent is removed under reduced pressure, **a heat treatment is performed at 150.degree. C. to effect conjugation, and this is fixed** to the areas to be coated to form the organic semiconductor film 43.

[0177] For the substrate whereon ITO or SiO_2 is formed, **an ink was used made by adding methanol, glycerin, and ethoxy ethanol to a water dispersion of a hole injection material (polyethylene dioxythiophene to which a polystyrene-sulfonic acid was added).**

[0249] The ink used for the substrates whereon polyimide films and ITO were formed was made by adding **methanol, glycerin, and ethoxy ethanol to a water dispersion of a hole injection material (a polyethylene dioxythiophene to which a polystyrene sulfonic acid had been added).**

Regarding the use of carbon black, the following summarizes this aspect of the rejection:

Seki teaches using a black pigment in the resinous partitioning members;

Seki does not teach using carbon black as the black pigment;

Nakai teaches adding carbon black to resinous partition walls of an imaging device;

Fonash teaches carbon black/polymer composites have contact angles $>100^\circ$.

It would have been obvious to one skilled in the art to incorporate carbon black into the resinous partition walls of Seki because Seki teaches adding a black pigment while Nakai teaches that carbon black may be used as a black pigment in resinous partition walls and Fonash teaches that carbon black/polymer composites provide contact angles on the magnitude desired by Seki.

Regarding Nakai, applicant states:

Applicants note that there is no indication in Nakai that use of carbon black in the partitions provides any advantages over use of other black pigments or dyes. In fact, Applicants submit that Nakai does not provide any teaching or motivation for the selection of carbon black for use in a resin, particularly a resin subjected to the dry etching and plasma treatment processes disclosed in Seki et al.

Regarding Fonash, applicant states:

Fonash et al. was cited for disclosing that a carbon black/halogenated polymer has a water contact angle in excess of 100 degrees. Applicants submit, however, that there is no teaching or suggestion that carbon black incorporated into another type of polymer would have a similar water contact angle. That is, there is no teaching or suggestion that the carbon black is responsible for the water contact angle in the carbon black/halogenated polymer complex.

In response to applicant's argument that Nakai fails to provide motivation to select carbon black, the examiner notes that the claims were rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Nakai and further in view of Fonash. The rejection provided a motivation for using carbon black that was based upon the teachings of all three references. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.¹

¹ See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

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In response to applicant's argument that "there is no teaching or suggestion that the carbon black is responsible for the water contact angle in the carbon black/halogenated polymer complex", the examiner provides the following excerpt from Fonash that rebuts this position.

[0077]

Carbon black/halogenated polymer composites possess an extremely hydrophobic surface composition, when compared to the hydrophobicity of the polymer surface alone.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4-7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application US 2004/0201048 of Seki et al. (hereinafter, Seki) in view of US Patent 5,470,760 issued to Nakai and further in view of the Fonash et al. US Patent Application Publication 2002/0187312 (hereinafter, Fonash).

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Regarding claim 1, Seki teaches a method of forming an optical device wherein pixel demarcation is accomplished by forming resinous partition walls on a transparent substrate (see: [0154]). Seki teaches that the substrate having partition walls thereon, is dry etched with an oxygen plasma and then the substrate is subjected to a fluorine plasma treatment (see: [0055]). Seki teaches using an ink jet to apply ink to the pixels (see, [0002]). Seki teaches the partitioning members may be formed using a black pigment ([0154]).

Regarding the claimed contact angles of claims 1 and 5, Seki teaches achieving contact angles that coincide with applicant's claimed angles (see, [0050]).

Regarding claim 6, Seki teaches using one of CF₄, SF₆ and CHF₃ as the source of fluorine for the fluorine plasma treatment (see, [0050]).

Regarding claim 7, Seki teaches using a mixture of O₂ and one of CF₄, SF₆ and CHF₃ for the fluorine plasma treatment wherein the O₂ comprises 25 % of the gas mixture (see: figure 9 and [0178]).

Regarding claim 11, Seki teaches using ink comprising a colored resin and water and an organic solvent (see: abstract and [0145] - [0160]).

Regarding claim 9, Seki teaches providing a black matrix on a transparent substrate ([0154]).

Seki does not teach using carbon black in the resinous partitioning members.

Nakai teaches adding carbon black to the resinous partition walls of an imaging device.

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Fonash teaches that carbon black/polymer composites have contact angles greater than 100°.

It would have been obvious to one skilled in the art to incorporate carbon black into the resinous partition walls of Seki because Seki teaches adding a black pigment while Nakai teaches that carbon black may be used as a black pigment in resinous partition walls and Fonash teaches that carbon black/polymer composites provide contact angles on the magnitude desired by Seki.

Seki does not explicitly teach applicant's claimed results pertaining to the coarseness of the partition walls.

It would be obvious to one skilled in the art to carry out Seki's method according to the teachings of Seki. Because Seki and applicant use the same resinous material to form the partition walls and because Seki and applicant treat the resinous partition walls with the same plasma treatment, the skilled artisan is expected to achieve the same results that have been obtained by applicant.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

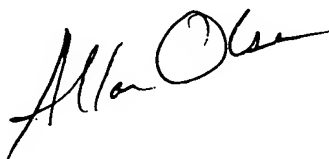
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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 571-272-1441. The examiner can normally be reached on M, W and F: 1-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Allan Olsen", is written over a horizontal line.

Allan Olsen
Primary Examiner
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